

Corunna soils have a moderate organic-matter content, moderate permeability in the subsoil but moderately slow permeatbility in the underlying material, and a high available water capacity. The main concerns of management are removing excess water and maintaining tilth and fertility.

This association is used mainly for corn, small grain, soybeans, and hay in farming areas and for homesites, industrial and commercial developments, recreational areas, airports, and roads near villages and cities. A few areas of undrained soils are used as permanent pasture and wildlife habitat. The main farm enterprises are cash crops, beef cattle, and truckcropping.

In the shaded part of the general soil map the main soil limitations are wetness and frost action. Pewamo soils are subject to flooding, and Selfridge soils are subject to caving of cutbanks.

6. Hoytville-Nappanee association

Nearly level and gently sloping, very poorly drained and somewhat poorly drained soils that have a fine textured subsoil

The landscape in this soil association is one of nearly level and gently sloping lake plains and moraines that are dissected by streams and creeks.

This soil assocation occupies about 39,000 acres or 17 percent of the unshaded part of the general soil map and about 25,000 acres or 16 percent of the shaded part. About 45 percent is Hoytville soils, 40 percent Nappanee soils, and 15 percent minor soils (fig. 9).

Hoytville soils are nearly level and are very poorly drained. The surface layer typically is very dark gray silty clay loam about 9 inches thick. The upper 21 inches of the subsoil is gray, firm clay mottled with yellowish brown. The lower 8 inches is grayish brown, firm silty clay mottled with yellowish brown and light gray. The underlying material is 12 inches of gray clay mottled with yellowish brown and at a depth of 50 inches light gray mottled with light yellowish brown, brown, and dark yellowish brown.

Nappanee soils are nearly level or gently sloping and are somewhat poorly drained. The surface layer typically is dark grayish brown silt loam 7 inches thick. The subsoil is about 4 inches of yellowish brown, firm clay mottled with grayish brown; about 13 inches of grayish brown, firm clay mottled with yellowish brown; and about 5 inches of grayish brown, firm clay mottled with yellowish brown, gray, and brown. Gray or light gray clay or silty clay mottled with yellowish brown, brown, or light olive brown is at a depth of about 29 inches.

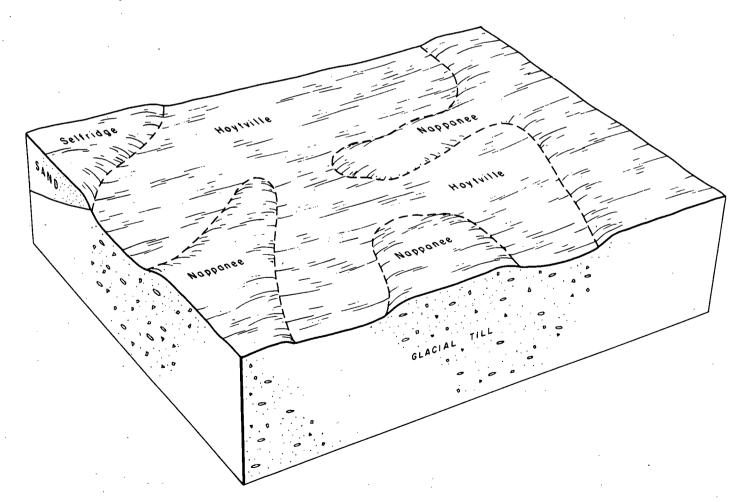


Figure 9.—Pattern of soils and underlying material in Hoytville-Nappanee association.

Among the minor soils in this association are Blount,

Pewamo, and Selfridge soils.

The minor soils are interspersed with Hoytville and Nappanee soils. Blount and Pewamo soils have the same slope as the major soils, but they are generally at the edges of this association. Selfridge soils are on slightly higher sandy rises.

Soils in the unshaded part of the general soil map are suited to crops commonly grown in the county. Hoytville and Nappanee soils have a moderate available water capacity, a moderate or moderately low organic-matter content, very slow or slow permeability, and slow to ponded runoff. The main concerns of management are controlling wetness and maintaining tilth.

This association is used mainly for corn and soybeans in farming areas and for urban development and roads near cities. Some areas are idle. A few areas of undrained soils are in woodland or in recreational uses. The main farm enterprise is cash crops.

In the shaded part of the general soil map the main soil limitations are wetness, high shrink-swell potential, and frost action.

7. Pewamo-Blount association

Nearly level and gently sloping, very poorly drained to somewhat poorly drained soils that have a moderately fine textured and fine textured subsoil

The landscape in this soil association is one of nearly

level and gently sloping lake plains and moraines that are dissected by streams and creeks.

This soil association occupies about 13,000 acres or 6 percent of the unshaded part of the general soil map and about 3,000 acres or 2 percent of the shaded part. About 45 percent is Pewamo soils, 35 percent Blount soils, and 20 percent minor soils (fig. 10).

Pewamo soils are nearly level and are poorly drained to very poorly drained. The surface layer typically is very dark gray loam about 10 inches thick. The subsoil is 8 inches of dark gray silty clay loam; 9 inches of gray, firm silty clay loam mottled with yellowish brown; and 9 inches of gray, firm heavy silty clay loam mottled with strong brown. Yellowish brown, slightly effervescent silty clay loam mottled with gray and brown is at a depth of about 36 inches.

Blount soils are nearly level to gently sloping and are somewhat poorly drained. The surface layer typically is dark grayish brown loam about 9 inches thick. The subsoil is 4 inches of dark yellowish brown, firm silty clay loam mottled with grayish brown and yellowish brown; 4 inches of dark yellowish brown firm clay mottled with grayish brown and yellowish brown; and 10 inches of dark yellowish brown firm clay mottled with gray. The underlying material is 13 inches of grayish brown, slightly effervescent silty clay loam mottled with yellowish brown and at a depth of 40 inches light yellowish brown silty clay loam mottled with gray and yellowish brown.

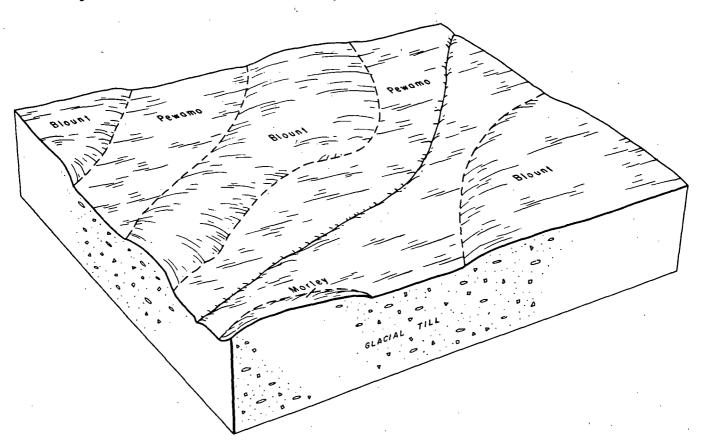


Figure 10.—Pattern of soils and underlying material in Pewamo-Blount association.

Table 4.—Suitability of soils for elements of wild-

	Suitability for elements of habitat—						
Soil series and map symbols	Grain and seed crops	Domestic grasses and legumes	Wild herbaceous plants	Hardwood trees			
Belleville: Ba	Poor	- Fair	Fair	Fair			
Blount: BbB BcA For Pewamo part, see Pewamo series.	Fair 1	Good	Good	Good			
Boyer: BnB, BnC	Poor	Fair	Good	Good			
Cohoctah: Cc	Poor	Fair	Fair	Fair			
Corunna: Co	Good 1	ł	Fair	Fair			
Cut and fill land: Cu. Too variable to be rated.							
Edwards: Ed	Very poor	Poor	Poor	Poor			
Gilford: Gf	Fair 1	Poor	Poor	Poor			
Granby: Gr	Poor	Fair	Fair	Fair			
Houghton: Hn	Fair 1	Poor	Poor	Poor			
Hoytville: Ho	Good 1	Poor	Poor	Poor			
Kibbie: KnA	Good 1		Good	Good			
Made land: Ma. Too variable to be rated.							
Marsh: Mb	Very poor	Very poor	Very poor	Very poor			
Metamora: MeA, MfA	Good	Good	Good	Good			
Metea: MhB	Poor	Fair	Good	Good			
Morley: MoB MoC MoD	Good FairPoor	Good Good Fair	Good : Good Good	GoodGood.			
Nappanee: NaB	Good		Good	Good			
Oakville: OaB			Fair				

Plantings are needed for erosion control, for farm and home windbreaks, for landscaping building sites, for establishing areas for wildlife food and cover, and for beautification. Many plantings can serve a dual purpose, for example, some can provide wildlife food and cover and also serve as windbreaks and improve the environment. Successful establishment of the plants can be expected if the area is properly prepared before planting and unwanted competing plants are controlled for at least 2 years or until the desired plants are established. The plants listed in each woody plant group are some of those commonly grown, but others may also be suitable. Some of the plants, as shown in table 3, are listed as suitable for more than one group.

Wildlife 4

Proper management of soil, water, and plants to produce suitable habitat is the most effective way to maintain and improve wildlife populations.

Table 4 rates the soils according to the level of suitability for elements of wildlife habitat and for general kinds of wildlife. A rating of good means that habitat is easily improved, maintained, or created. There are few or no soil limitations to habitat management, and satisfactory results can be expected. A fair rating indicates that habitat can be improved, maintained, or created, but moderate soil limitations affect habitat management or development. Moderately intensive management and fairly frequent attention may be required to insure satisfactory results. A rating of poor means that habitat can be improved, maintained, or created, but the soil limitations are severe. Habitat management may be difficult and expensive and may require intensive effort. Results are questionable. A rating of very poor indicates that, under the prevailing soil conditions, it is impractical to attempt to improve, maintain, or create habitat. Unsatisfactory results are probable. Seven elements of wildlife habitat are defined in the following paragraphs.

^{&#}x27;By CHARLES M. SMITH, biologist, Soil Conservation Service.

life habitat and as habitat for kinds of wildlife

Suitability for elements of habitat—Continued		Suitability as habitat for—			
Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Fair	Fair	Good	Fair	Fair	Fair.
Good	Poor Fair	Very poor	Good	Good Good	Very poor. Fair.
Good	Very poor	Very poor	Fair		Very poor.
Poor	_ Good	Good	Fair	_ Fair	Good.
Fair	Good	Good	Fair	Fair	Good.
Poor	_ Good	Good	Very poor	Poor	Good.
Poor	_ Good	Good	Poor		Good.
Fair	•	Good	Fair	1.	Fair.
Poor	•	Good	Poor	_ Poor	Good.
Poor	Good	Good	Fair	_ Poor	Good.
Fair	. Fair	Fair	Good	Good	Fair.
				· .	r
Very poor	Good	Good	Very poor	Very poor	Good.
Good	Fair	Fair	Good	_ Good	Fair.
Good	Poor	Very poor	Fair	Good	Very poor.
GoodGood		Very poor Very poor Very poor	Good Good Fair	_ Good	Very poor. Very poor. Very poor.
Good	, 	Very poor		i .	Very poor.
Fair	Poor	i	i	1	Very poor.

Grain and seed crops.—Domestic grain or other seed-producing annuals planted to produce wildlife food. Examples are corn, wheat, oats, rye, barley, buckwheat, millet, sorghum, soybeans, and sunflowers.

Domestic grasses and legumes.—Domestic perennial grasses and herbaceous legumes planted for wildlife food and cover. Examples are fescue, timothy, bromegrass, clover, orchardgrass, bluegrass, trefoil, alfalfa, crown vetch, switchgrass, sudangrass, and reed canarygrass.

Wild herbaceous plants.—Native or naturally established herbaceous grasses and forbs (including weeds), commonly grown in upland areas, that provide food and cover for wildlife. Among these are goldenrod, ragweed, nightshade, strawberry, lambsquarters, dandelions, wintergreen, and native grasses.

Hardwood trees.—Nonconiferous or deciduous trees and associated woody understory plants that provide wildlife cover or that produce nuts, buds, catkins, sprouts, twigs, bark, or foliage used as food by wild-

life. Representative species are maple, beech, oak, poplar, birch, willow, cherry, ash, walnut, elm, hawthorn, basswood, and serviceberry.

Coniferous plants.—These are cone-bearing trees, shrubs, or ground cover that furnish wildlife cover and food in the form of browse, seeds, or fruitlike cones. They may be planted or transplanted, but they are commonly established through natural processes. Examples are pine, spruce, hemlock, fir, cedar, larch, juniper, and yew.

Wetland plants.—Annual or perennial wild herbaceous plants in moist or wet sites, exclusive of submerged or floating aquatics, that provide food or cover used extensively by wetland forms of wildlife. Examples are smartweed, wild millet, rushes, sedges, reeds, wild rice, cattail, arrowhead, pickerelweed, and water plantain.

Shallow water areas.—These are areas of surface water, with an average depth of less than 5 feet, that are useful to wildlife. They may be naturally wet areas or areas created by dams or levees or by water-control

TABLE 10.—Classification of soils

Soils	Family	Subgroup	Order
Relleville	Sandy over loamy, mixed, mesic	Typic Haplaquolls	Mollisols.
Blount	Fine, illitic, mesic	Aeric Ochraqualfs	Alfisols.
Rover	Coarse-loamy, mixed, mesic	Typic Hapludalfs	Alfisols.
Cohoctah	Coarse-loamy, mixed, mesic	Fluvaquentic Haplaquolls	Mollisols.
Carunna	Coarse-loamy, mixed, mesic	Typic Haplaquolls	Mollisols.
Cut and fill land	Loamy and sandy	Not classified	Entisols.
Edwards	Marly, euic. mesic	Limnic Medisaprists	Histosols.
Gilford	Coarse-loamy, mixed, mesic	Typic Haplaquolls	Mollisols.
Granhy	Sandy, mixed, mesic	Typic Haplaquolls	Mollisols.
Houghton	Euic, mesic	Typic Medisaprists	Histosols.
Hovtville	Fine, illitic, mesic	Mollic Ochraqualfs	Alfisols.
Kibbie	Fine-loamy, mixed, mesic	Aquollic Hapludalfs	Alfisols.
Made land	Not classified	Not classified	Histosols and Entisols.
		Not classified	
Metamora	Fine-loamy, mixed, mesic	Udollic Ochraqualfs	Alfisols.
Metes 1	Loamy, mixed, mesic	Arenic Hapludalfs	Alfisols
Morley	Fine, illitic, mesic	Typic Hapludalfs	Alfisols
Vonnance	Fine, illitic, mesic	Aeric Ochraqualfs	Alfisols.
Oakville		Typic Udipsamments	Entisols.
Jwoggo	Fine-loamy, mixed, mesic	Typic Hapludalfs	Alfisols.
Pella	Fine-silty, mixed, mesic	Typic Haplaguolls	Mollisols.
	Fine, mixed, mesic	Typic Argiaquolls	Mollisols.
Selfridge	Loamy, mixed, mesic	Aquic Arenic Hapludalfs	Alfisols.
Shoals i	Fine-loamy, mixed, nonacid, mesic	Aeric Fluvaquents	Entisols.
Sloan	Fine-loamy, mixed, mesic	Fluvaquentic Haplaquolls	Mollisols.
Spinks	Sandy, mixed, mesic	Psammentic Hapludalfs	l Alfisols.
St. Clair	Fine, illitic, mesic	Typic Hapludalfs	l Alfisols.
	Mixed. mesic	Aguic Udipsamments	Entisols.
hetford	Sandy, mixed, mesic	Psammentic Hapludalfs	Alfisols.
	Coarse-loamy, mixed, mesic	Aquollic Hapludalfs	

^{&#}x27;These soils are taxadjuncts. They are outside the defined range for the series with which they are here identified in the following ways:

Metea—These soils have a thinner loamy B horizon.

Shoals—These soils lack sufficient gray colors within 20 inches of the surface.

trap fur-bearing animals, and Detroit became a furtrading center.

There were ready markets for farm products in Detroit. Some of the farm products were shipped to the growing urban centers of the middle west. The lumbering industry became important to Wayne County in 1850, becoming second in size and importance only to the manufacture of machinery. Large numbers of men found employment and the means for the profitable investment of capital in lumbering and mining, but far more people invested in land. They earned a living by cultivating the soil. Crops such as corn, wheat, oats, rye, barley, buckwheat and tobacco were produced. Other products such as butter, cheese, and wool were part of Wayne County's agriculture. The production of the farm products in 1850 was more than twice the production of ten years earlier. Development and growth of the carriage and other heavy industry, which eventually developed into the automobile industry, attracted many people to Wayne County.

The paragraphs that follow briefly describe the farming, geology, water supply, and climate in Wayne County.

Farming

According to the 1969 Census of Agriculture, there were 597 farms in Wayne County. The land area in farms was 49,527 acres, 25,562 acres of which was in

harvested cropland and 1,692 acres in pastureland. Corn for grain accounted for 3,678 acres, corn for silage 428 acres, wheat 1,711 acres, oats 979 acres, and soybeans 8,960 acres, Approximately 524 acres was in clover or timothy.

Vegetables harvested in 1969 accounted for 2,068 acres. Of this acreage, sweet corn was produced on 1,293 acres, tomatoes on 209 acres, cucumbers, watermelons, snap beans, bush and pole beans on 99 acres, and pumpkin and other vegetables on 357.

Geology

A layer of glacial drift ranging in thickness from a few feet to as much as 330 feet overlies the bedrock in Wayne County. These deposits cover all of the Detroit area except for a small outcrop of bedrock in the southeastern part. The glacial deposits are thinnest near the mouth of the Detroit River and, in general, thicken gradually toward the west and more rapidly toward the northwest.

Continental glaciers picked up the mantle of soil and loose rock at the earth surface and incorporated it into the lower part of the ice along with additional material gouged from the bedrock. This material was later deposited in various forms by the melting ice.

The old glacial lakebed is a clay plain. A series of hills and ridges of sand and gravel as high as 25 to 30 feet rest on the clay plain. These hills and ridges were 78 SOIL SURVEY

formed as beaches, terraces, and river deltas by wind, waves, and stream action during the closing part of the glacial epoch. They are very porous and readily absorb a large percentage of the precipitation. Normally the water seeps downward to the water table where it moves transversely above a layer of impervious clay toward points of discharge.

Water Supply

The 1970 census reported that 7,718 housing units in Wayne County were using individual wells.

The water level in wells does not remain constant. It rises and falls in response to changes in the rate of recharge and discharge. If more water is recharged than is withdrawn, the water level rises; if more water is withdrawn than is recharged, the water level falls.

The bedrock formation immediately underlying glacial deposits in the Wayne County area consists of several hundred feet of sedimentary rocks deposited in ancient inland seas. The older rocks in Wayne County contain highly mineralized water.

The wells in glacial drift usually produce calcium magnesium bicarbonate water. The range of concentration is wide. In some wells, the wide ranges are probably caused by contamination of water from the surface or by highly mineralized water from the bedrock.

Climate 8

Wayne County is on the southwestern shore of Lake St. Clair. The Detroit River, connecting Lake St. Clair with Lake Erie, forms the eastern boundary of ap-

proximately two-thirds of the county.

The prevailing wind direction is from the southwest at an average annual speed of 10.0 knots. The maximum average monthly windspeed and direction is 11.3 knots from the west-southwest during both January and April. February and March approximate this maximum, with an average windspeed of 11.2 knots from a west-southwest direction. The minimum average monthly windspeed and direction is 8.2 knots from the southwest during August. The fastest observed oneminute windspeed was 87 knots on June 26, 1973.

As a result of the prevailing winds, the influence of Lake St. Clair and Lake Erie is limited to local lake breezes or to storm tracks that blow from the east off of the lakes. West and northwest are downslope of the Irish Hills area, which is located to the west and northwest of the county and rises to a relative height of 500 to 600 feet above the average river level of the east boundary. This subsidence provides some warming and drying of the air flowing downslope, while the opposite processes occur on winds blowing upslope.

Climatological data for the county are given in tables 11, 12, and 13. The average annual maximum temperatures range from 58.3° F. at the Detroit City Airport to 60.3° at the Dearborn climatological station, with an intermediate temperature of 58.7° at the Detroit Metropolitan Airport. Lake breezes can lower

daily maximum temperatures by as much as 15° relative to the areas not under their influence. The average annual minimum temperatures range from 39.4° at the Detroit Metropolitan Airport to 41.4° at the Detroit City Airport, with an intermediate temperature of 40.6° at the Dearborn climatological station.

The large urban industrial area of the county affects the climate by creating the urban "heat island" effect. The difference in minimum temperatures between urban and rural areas can exceed 10° under extreme conditions. The highest temperature of record is 105° in July 1934, and the lowest temperature of record is -24° in December 1872. On the average, temperatures of more than 90° occur 15 times during the summer, and temperatures below 0° occur four times during the winter. The highest mean monthly temperature was 79.1° in July 1955, and the lowest mean monthly temperature was 15.8° in January 1963.

The average annual number of heating and cooling degree days (base 65° F.) are 6,233 and 875 respectively. January is the coldest with an average of 1,238 heating degree days, and July is the warmest with an average of 275 cooling degree days.

The growing season averages 170 days. At Dearborn, the average date of the last freezing temperature in spring is April 26, and the average date of the first freezing temperature in fall is October 19.

More than half of the annual precipitation, an average of 63 percent, falls during the 6-month period from April through September. June is the month of the heaviest average precipitation, and February is the month of the lightest. The wettest month of record was July 1878, when precipitation measured 8.76 inches. The driest month of record was February 1877, when precipitation measured 0.04 inches. The maximum precipitation recorded during a 24-hour period was 4.75 inches at Detroit Metropolitan Airport on July 31, 1925. About once in 2 years, as much as 1.1 inches of rain falls in an hour, as much as 1.3 inches in 2 hours, and as much as 2.1 inches in 24 hours. About once in 10 years, as much as 3.5 inches falls in 24 hours, and once in 50 years, as much as 4.7 inches falls in 24 hours.

Data recorded at Dearborn indicate that the average total evaporation (Class A pan) between the first of May and the end of October is 34.71 inches, which is more than twice the average total rainfall of 15.75 inches for the same period. The deficit is made up from water stored in the soils since the recharging of the water table by the rains of winter and early spring.

Snowfall averages 32 inches a year but varies considerably from year to year. During the last 40 years, annual totals have ranged from 58 inches in the 1951-52 season to 11 inches in the 1948-49 season. Measurable amounts of snow usually fall each month from October through April. Cloudy days are most common late in fall and early in winter and least common late in spring and in summer. Data from the National Weather Service for Detroit City Airport for the past 32 years indicate that January averaged 4 clear days, 6 partly cloudy days, and 21 cloudy days; July averaged 9 clear days, 13 partly cloudy days, and 9 cloudy days.

FRED V. NURNBERGER, meterologist for Michigan Department of Agriculture, Weather Service, helped prepare this section.

TABLE 11.—Temperature and precipitation

[Based on U.S. National Weather Service records kept at Dearborn, Wayne County, Michigan for the period 1953-70]

	Temperature				Precipitation				
				n 10 will have lays with—		One year in 1	0 will have—	Average	
daily	Average daily minimum	Maximum tempera- ture equal to or higher than—	Minimum tempera- ture equal to or lower than-	Average monthly total	Less than—	More than—	more of	Average depth of snow on days with snow cover	
	oF	•F	oF	op	Inches	Inches	Inches	10	Inches
January February	32.0 36.1	17.7 19.9	46	į	1.60 1.36	0.50 .33	2.86 2.76	18 14	2.6 2.6
March	45.1	26.9	50 66	13	1.89	.94	3.27	17	2.5 2.5
April	60.6	38.4	79	27	3.00	1,41	4.63	lil	1.6
May	71.7	48.0	86	36	2.77	1.51	4.20	اةا	ō.
June	81.1	57.5	93	45	3.84	1.87	6.21	l ŏ l	Ŏ
July	85.0	62.0	93	52	3.24	1.20	5.55	Ó	0 -
August	83.4	60.8	93	51	3.46	1.44	5.94	0	Ó
September	76.6	54.1	90	41	2.44	1.15	4.12	0	0
October	65.7	43.9	80	31 21	2.32	.54	4.45	0	0
November	49.9	33.8	66	21	2.00	.83	3.67	2	2.0
December	36.9	23.2	53	7	1.85	.43	4.34	12	2.5
Year	60.3	40.6	196	<u>"</u> −3	29.75	22.76	38.02	54	2.3

¹ Average yearly maximum.

TABLE 12.—Probabilities of last freezing temperatures in spring and first in fall

[Based on data from Dearborn for the period 1953-72]

Probability	Dates for given probability and temperature							
	16° F or lower	20° F or lower	24° F or lower	28° F or lower	32° F or lower			
Spring:		·						
1 year in 10 later than	March 29	April 6	April 14	April 27	May 11			
2 years in 10 later than	March 24	April 1	April 9	April 22	May 6			
5 years in 10 later than	March 14	March 22	March 30	April 12	April 26			
Fall:								
1 year in 10 earlier than	November 19	November 12	October 27	October 16	October 3			
2 years in 10 earlier than	November 24	November 17	November 1	October 21	October 8			
5 years in 10 earlier than	December 5	November 28	November 12	November 1	October 19			

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² Average yearly minimum.

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE MICHIGAN AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

WAYNE COUNTY, MICHIGAN

SOIL ASSOCIATIONS

Wasepi-Gilford-Boyer association: Nearly level to sloping, very poorly drained, somewhat poorly drained, and well drained soils that have a coarse textured or moderately coarse textured subsoil

Pewamo-Blount-Metamora association: Nearly level to gently sloping, very poorly drained to somewhat poorly drained soils that have a fine textured to moderately coarse textured subsoil

Thetford-Granby-Tedrow association: Nearly level, very poorly drained to somewhat poorly drained soils that have a coarse textured subsoil

Belleville-Selfridge-Tedrow loamy substratum association: Nearly level to gently sloping, very poorly drained to somewhat poorly drained soils that have a coarse textured to moderately fine textured subsoil over a coarse textured to moderately fine textured substratum

Pewamo-Selfridge-Corunna association: Nearly level to gently sloping, very poorly drained to somewhat poorly drained soils that have a moderately fine textured to coarse textured subsoil

Hoytville-Nappanee association: Nearly level and gently sloping, very poorly drained and somewhat poorly drained soils that have a fine textured subsoil

Pewamo-Blount association: Nearly level and gently sloping, very poorly drained to somewhat poorly drained soils that have a moderately fine textured and fine textured subsoil

Morley-Blount association: Nearly level to strongly sloping, somewhat poorly drained to well drained soils that have a moderately fine textured and fine textured subsoil

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Compiled 1976

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